Microsemi LAWRENCE

TECHNICAL DATA

PNP SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/512

Devices		*Qualified Level*
2N4029	**2N4033**	**JAN JANTX JANTXV**

MAXIMUM RATINGS

Ratings	Symbol	VALUE		Unit
Collector-Emitter Voltage	V_{CEO}	80		Vdc
Collector-Base Voltage	V_{CBO}	80		Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current	I_C	1.0		Adc
		2N4029[1]	**2N4033[2]**	
Total Power Dissipation @ $T_A = +25^0C$	P_T	0.5	0.8	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200		^0C

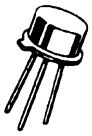
THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	25.0	$^0C/W$

1) Derate linearly 2.86 mW/^{0}C for $T_A > +25^0C$
2) Derate linearly 4.56 mW/^{0}C for $T_A > +25^0C$



TO-18* (TO-206AA)
2N4029



TO-39* (TO-205AD)
2N4033

*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Base Cutoff Current V_{CB} = 80 Vdc V_{CB} = 60 Vdc	I_{CBO}		 10 10	 µAdc ηAdc
Emitter-Base Cutoff Current V_{BE} = 5.0 Vdc V_{BE} = 3.0 Vdc	I_{EBO}		 25 10	 µAdc ηAdc
Collector-Emitter Cutoff Voltage V_{BE} = 40 Vdc; V_{CE} = 60 Vdc	I_{CEX}		25	ηAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (3)				
Forward-Current Transfer Ratio I_C = 100 μAdc, V_{CE} = 5.0 Vdc I_C = 100 mAdc, V_{CE} = 5.0 Vdc I_C = 500 mAdc, V_{CE} = 5.0 Vdc I_C = 1.0 Adc, V_{CE} = 5.0 Vdc	h_{FE}	50 100 70 25	300	
Collector-Emitter Saturation Voltage I_C = 150 mAdc, I_B = 15 mAdc I_C = 500 mAdc, I_B = 50 mAdc I_C = 1.0 Adc, I_B = 100 mAdc	$V_{CE(sat)}$		0.15 0.50 1.0	Vdc
Base-Emitter Voltage I_C = 150 mAdc, I_B = 15 mAdc I_C = 500 mAdc, I_B = 50 mAdc	$V_{BE(sat)}$		0.9 1.2	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer Ratio I_C = 50 mAdc, V_{CE} = 10 Vdc, f = 100 MHz	$\lvert h_{fe} \rvert$	1.5	6.0	
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{obo}		20	pF
Input Capacitance V_{EB} = 0.5 Vdc, I_C = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{ibo}		80	pF
SWITCHING CHARACTERISTICS				
On-Time V_{CC} = 31.9 Vdc; I_C = 500 mAdc; I_{B1}= 50 mAdc	t_d		15	ηs
Rise Time V_{CC} = 31.9 Vdc; I_C = 500 mAdc; I_{B1} = 50 mAdc	t_r		25	ηs

(3) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.